

0530
0619

#9



OIKE

ENTERED

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/060,848DATE: 06/17/2002 P.6
TIME: 13:39:03Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw

```

3 <110> APPLICANT: Kloeck, Andrew
4     Williams, Deryck Jeremy
5     Salmon, Brandy Leigh
7 <120> TITLE OF INVENTION: NEMATODE MDH-LIKE SEQUENCE
9 <130> FILE REFERENCE: 12557-002001
11 <140> CURRENT APPLICATION NUMBER: US 10/060,848
C--> 12 <141> CURRENT FILING DATE: 2002-06-10
14 <150> PRIOR APPLICATION NUMBER: US 60/266,037
15 <151> PRIOR FILING DATE: 2001-02-02
17 <160> NUMBER OF SEQ ID NOS: 15
19 <170> SOFTWARE: FastSEQ for Windows Version 4.0
21 <210> SEQ ID NO: 1
22 <211> LENGTH: 1327
23 <212> TYPE: DNA
24 <213> ORGANISM: Meloidogyne incognita
26 <220> FEATURE:
27 <221> NAME/KEY: CDS
28 <222> LOCATION: (55)...(1152)
30 <221> NAME/KEY: misc_feature
31 <222> LOCATION: (1)...(1327)
32 <223> OTHER INFORMATION: n = A,T,C or G
W--> 34 <400> 1
35 caagtttgag atatttaa at tattattttg gtgctaagaa aaattttgtg aaaa atg      57
36                                     Met
37                                     1
39 aat tat tca aag gat gcc cca gaa ttt gtt gtg tct cca aaa gat gca      105
40 Asn Tyr Ser Lys Asp Ala Pro Glu Phe Val Val Ser Pro Lys Asp Ala
41         5                10                15
43 cgc gaa ttt gtt gta aaa tgt atg caa aca gtt gga aca tcc cct gac      153
44 Arg Glu Phe Val Val Lys Cys Met Gln Thr Val Gly Thr Ser Pro Asp
45         20                25                30
47 cat gct ggt caa tta gca gat cta tta ttg gat gct gat ctt gtt gga      201
48 His Ala Gly Gln Leu Ala Asp Leu Leu Leu Asp Ala Asp Leu Val Gly
49         35                40                45
51 cac tat agt cat ggt cta aat cga ctt cat att tat gtg gat gac gtc      249
52 His Tyr Ser His Gly Leu Asn Arg Leu His Ile Tyr Val Asp Asp Val
53 50                55                60                65
55 aaa aac gga gtt aaa gga aat gga gtt cca aaa gtg tta aaa caa aaa      297
56 Lys Asn Gly Val Lys Gly Asn Gly Val Pro Lys Val Leu Lys Gln Lys
57         70                75                80
59 gga ggc act gct tgg gtt gat gga gaa aat ctt ctg ggt gca gtt gtt      345
60 Gly Gly Thr Ala Trp Val Asp Gly Glu Asn Leu Leu Gly Ala Val Val
61         85                90                95

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RAW SEQUENCE LISTING

DATE: 06/17/2002

PATENT APPLICATION: US/10/060,848

TIME: 13:39:04

Input Set : A:\12557-002001.txt

Output Set: N:\CRF3\06172002\J060848.raw

63	gga aac ttc tgt acc gac ttg gct att aaa ttg gct aaa gaa ttt ggc	393
64	Gly Asn Phe Cys Thr Asp Leu Ala Ile Lys Leu Ala Lys Glu Phe Gly	
65	100 105 110	
67	gtt gct tgg gtg gta aca aaa aat tct aat cat tat gga gct tgt caa	441
68	Val Ala Trp Val Val Thr Lys Asn Ser Asn His Tyr Gly Ala Cys Gln	
69	115 120 125	
71	cat tat act aag aaa att gca aat gca gga atg gtg gga atg tct ttt	489
72	His Tyr Thr Lys Lys Ile Ala Asn Ala Gly Met Val Gly Met Ser Phe	
73	130 135 140 145	
75	aca aat aca tcg cct ctc atg ttc ccc tgc cga tct tct gag att gga	537
76	Thr Asn Thr Ser Pro Leu Met Phe Pro Cys Arg Ser Ser Glu Ile Gly	
77	150 155 160	
79	ctt ggt aca aac cct ctt tct tgt tgt gtc aac tcg gaa aag aca gga	585
80	Leu Gly Thr Asn Pro Leu Ser Cys Cys Val Asn Ser Glu Lys Thr Gly	
81	165 170 175	
83	gac agt ttt ttg tta gac atg gct acg aca act gtt gct ctt gga aag	633
84	Asp Ser Phe Leu Leu Asp Met Ala Thr Thr Thr Val Ala Leu Gly Lys	
85	180 185 190	
87	gta gag ctg gca gat tgt cgc ggt aaa aca caa att ccc tcc aca tgg	681
88	Val Glu Leu Ala Asp Cys Arg Gly Lys Thr Gln Ile Pro Ser Thr Trp	
89	195 200 205	
91	ggt gcc gat tct aaa ggc aat cca tcg act gat aca caa gtt gtt tta	729
92	Gly Ala Asp Ser Lys Gly Asn Pro Ser Thr Asp Thr Gln Val Val Leu	
93	210 215 220 225	
95	cac ggt ggc gga ctt ttg cct tta ggc ggt ata gaa gag acg gga tct	777
96	His Gly Gly Gly Leu Leu Pro Leu Gly Gly Ile Glu Glu Thr Gly Ser	
97	230 235 240	
99	tac aaa gga acg ggt ctt tca atg atg ggt gaa ttg ttt tgt gga att	825
100	Tyr Lys Gly Thr Gly Leu Ser Met Met Gly Glu Leu Phe Cys Gly Ile	
101	245 250 255	
103	ttg gca ggg tca agt ttt gga aaa aat gta cga tta tgg ggg caa tca	873
104	Leu Ala Gly Ser Ser Phe Gly Lys Asn Val Arg Leu Trp Gly Gln Ser	
105	260 265 270	
107	cac aaa gcc gct gac aat ggc caa tgt ttt gtt gct att gat caa gaa	921
108	His Lys Ala Ala Asp Asn Gly Gln Cys Phe Val Ala Ile Asp Gln Glu	
109	275 280 285	
111	tgt ttt gcc cca gga ttt gct cct cgt tta caa caa ttt ttg gat gaa	969
112	Cys Phe Ala Pro Gly Phe Ala Pro Arg Leu Gln Gln Phe Leu Asp Glu	
113	290 295 300 305	
115	aca cgg aat ttg aaa ccg att tct gaa gaa aag cct gtt cta gtg cct	1017
116	Thr Arg Asn Leu Lys Pro Ile Ser Glu Glu Lys Pro Val Leu Val Pro	
117	310 315 320	
119	gga gat cct gaa aga atg aat aca gaa tat agc caa aag gct gga ggt	1065
120	Gly Asp Pro Glu Arg Met Asn Thr Glu Tyr Ser Gln Lys Ala Gly Gly	
121	325 330 335	
123	ttg gta tac caa gaa ggg cag ata aaa gct ttg gaa gag ttg gcc aca	1113
124	Leu Val Tyr Gln Glu Gly Gln Ile Lys Ala Leu Glu Glu Leu Ala Thr	
125	340 345 350	
127	aaa tgt gat gtt caa atg ttc tca tac aaa cga cta aaa tgaggatgag	1162

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```

128 Lys Cys Asp Val Gln Met Phe Ser Tyr Lys Arg Leu Lys
129      355      360      365
131 attttaaatat ttttttgtgt agctgaaact gacttcaaac gagaaatgaa caatttccta 1222
132 aaaagcagtt agataagggt ttatttttca tttatttatt ttttaacctc attttttata 1282
W--> 133 tacgaataaa attaatgctc naaaaaaaaa aaaaaaaaaa aaaaa 1327
135 <210> SEQ ID NO: 2
136 <211> LENGTH: 2088
137 <212> TYPE: DNA
138 <213> ORGANISM: Meloidogyne incognita
140 <220> FEATURE:
141 <221> NAME/KEY: CDS
142 <222> LOCATION: (28)...(1125)
144 <221> NAME/KEY: misc_feature
145 <222> LOCATION: (1)...(2088)
146 <223> OTHER INFORMATION: n = A,T,C or G
W--> 148 <400> 2
149 tgggtgctaag aaaaattttg tgcgaaa atg aat tat tca aag gat gcc cca gaa 54
150      Met Asn Tyr Ser Lys Asp Ala Pro Glu
151      1      5
153 ttt gtt gtc tct cca aaa gat gct cgc gaa ttt gtt gta aaa tgt atg 102
154 Phe Val Val Ser Pro Lys Asp Ala Arg Glu Phe Val Val Lys Cys Met
155 10      15      20      25
157 caa aca gtt gga aca tcc cct gac cat gct ggt caa tta gca gat ctc 150
158 Gln Thr Val Gly Thr Ser Pro Asp His Ala Gly Gln Leu Ala Asp Leu
159      30      35      40
161 tta tta gat gct gat ctt gtt ggg cat tac agt cat ggt cta aat cgg 198
162 Leu Leu Asp Ala Asp Leu Val Gly His Tyr Ser His Gly Leu Asn Arg
163      45      50      55
165 ctt cat att tat gtg gat gac gtc aaa aat gga gtt aaa gga aat gga 246
166 Leu His Ile Tyr Val Asp Asp Val Lys Asn Gly Val Lys Gly Asn Gly
167      60      65      70
169 gtt cca aaa gtg tta aaa caa aaa gga ggc act gct tgg gtg gat gga 294
170 Val Pro Lys Val Leu Lys Gln Lys Gly Gly Thr Ala Trp Val Asp Gly
171      75      80      85
173 gaa aat ctt ttg ggt gca gtt gtt ggc aac ttc tgt acc gat ttg gct 342
174 Glu Asn Leu Leu Gly Ala Val Val Gly Asn Phe Cys Thr Asp Leu Ala
175 90      95      100      105
177 att aaa ttg gct aaa gaa ttt ggt gtt gct tgg gtg gta aca aaa aat 390
178 Ile Lys Leu Ala Lys Glu Phe Gly Val Ala Trp Val Val Thr Lys Asn
179      110      115      120
W--> 181 tct aat cat tat gga gct ngc caa cat tat act aag aaa att gcg aat 438
W--> 182 Ser Asn His Tyr Gly Ala Xaa Gln His Tyr Thr Lys Lys Ile Ala Asn
183      125      130      135
185 gca gga atg gtg gga atg tca ttt aca aat act tca cct ctc atg ttc 486
186 Ala Gly Met Val Gly Met Ser Phe Thr Asn Thr Ser Pro Leu Met Phe
187      140      145      150
189 ccc tgc cgt tct tct gag atc gga cta ggc aca aac cct ctt tct tgt 534
190 Pro Cys Arg Ser Ser Glu Ile Gly Leu Gly Thr Asn Pro Leu Ser Cys
191      155      160      165

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TIME: 13:39:04

Input Set : A:\12557-002001.txt

Output Set: N:\CRF3\06172002\J060848.raw

193	tgt gcc aac tcg gaa aag aca gaa gac agt ttt ttg tta gac atg gct	582
194	Cys Ala Asn Ser Glu Lys Thr Glu Asp Ser Phe Leu Leu Asp Met Ala	
195	170 175 180 185	
197	act aca act gtt gct cta gga aag gtt gag ctg gca aat tgt cgc ggt	630
198	Thr Thr Thr Val Ala Leu Gly Lys Val Glu Leu Ala Asn Cys Arg Gly	
199	190 195 200	
201	aaa aca caa att ccc tca gca tgg ggt gcc gat tct aaa ggc aat cca	678
202	Lys Thr Gln Ile Pro Ser Ala Trp Gly Ala Asp Ser Lys Gly Asn Pro	
203	205 210 215	
205	tca aca gac aca caa gtt gtt tta cat ggt ggc gga ctt ttg cct tta	726
206	Ser Thr Asp Thr Gln Val Val Leu His Gly Gly Gly Leu Leu Pro Leu	
207	220 225 230	
209	ggc ggt ata gaa gag acg gga tct tac aaa gga acg ggt ctc tca atg	774
210	Gly Gly Ile Glu Glu Thr Gly Ser Tyr Lys Gly Thr Gly Leu Ser Met	
211	235 240 245	
213	atg ggt gaa ttg ttt tgt gga att ttg gca ggg tca agt ttt gga aaa	822
214	Met Gly Glu Leu Phe Cys Gly Ile Leu Ala Gly Ser Ser Phe Gly Lys	
215	250 255 260 265	
217	aat gta cga tta tgg ggg caa tca cac aaa gcc gct gac aat ggc caa	870
218	Asn Val Arg Leu Trp Gly Gln Ser His Lys Ala Ala Asp Asn Gly Gln	
219	270 275 280	
221	tgt ttt gtt gct att gat caa gaa tgt ttt gcc cca gga ttt gct cct	918
222	Cys Phe Val Ala Ile Asp Gln Glu Cys Phe Ala Pro Gly Phe Ala Pro	
223	285 290 295	
225	cgt tta caa caa ttt ttg gat gaa aca cgg aat ttg aaa ccg att tct	966
226	Arg Leu Gln Gln Phe Leu Asp Glu Thr Arg Asn Leu Lys Pro Ile Ser	
227	300 305 310	
229	gaa gaa aag cct gtt cta gtg cct gga gat cct gaa aga atg aat aca	1014
230	Glu Glu Lys Pro Val Leu Val Pro Gly Asp Pro Glu Arg Met Asn Thr	
231	315 320 325	
233	gaa tat agc caa aag gct gga ggt ttg gta tac caa gaa ggg cag ata	1062
234	Glu Tyr Ser Gln Lys Ala Gly Gly Leu Val Tyr Gln Glu Gly Gln Ile	
235	330 335 340 345	
237	aaa gct ttg gaa gag ttg gcc aca aaa tgt gat gtt caa atg ttc tca	1110
238	Lys Ala Leu Glu Glu Leu Ala Thr Lys Cys Asp Val Gln Met Phe Ser	
239	350 355 360	
241	tac aaa cga cta aaa tgaggatgag atttaaatat ttttttgtgt agctgaaact	1165
242	Tyr Lys Arg Leu Lys	
243	365	
245	gacttcaaac gagaaatgaa caatttcccta aaaagcagtt agataagggt ttatttttca	1225
246	tttatttatt ttttaacctc attttttata taogaagcag atatgactga aactggaggt	1285
247	ggtgattctg ttgaatctgc aagtgtttat gctaactctg tttgtgaaat gtgcggaaat	1345
248	tatgaggttc aacttcaaac aattcaaagc agtcaggata ctctcaggga gaaattggca	1405
249	gctgctaaag aattgtatga gaaatatggc aaggaattga cagaagagag gcattatcga	1465
250	aaggaattgg aaattaaatt tgctgcttta aatgaagaaa ctgaaggga aattcagcaa	1525
W--> 251	tgtattacca atacagaaga ctttgacagc gtattgcctt ctcagtataa aacaanaagc	1585
W--> 252	tgatttgtct gttttggaat cncaattaga attggctagg aatcgtcaaa aagagcttca	1645
253	agaacaattg gttttgttaa atgaaaggta tgaaaaactt ttacatttaa aatctcaatg	1705
254	tgctgaagaa atgcgtgaac aacaaattga actgcctcaa acagttgaag aacttcaatt	1765

RAW SEQUENCE LISTING

DATE: 06/17/2002

PATENT APPLICATION: US/10/060,848

TIME: 13:39:04

Input Set : A:\12557-002001.txt

Output Set: N:\CRF3\06172002\J060848.raw

```

W--> 255 tttggcattg cagttganag aggaattgat aactgaacgt gcagcacgtg agcatgaaag 1825
      256 gagggaatta aatgatgaat tggctatggc acgtcaacag cttgttgaat tggaaatttg 1885
W--> 257 tccnagagaa aatgaagaat gaattttatg atatataaaa atatatttat tttgctcaaa 1945
W--> 258 tagnttttat aaattttaag agctgataga aaaatttagt tttgnaattt ttgaagaata 2005
W--> 259 tattttntac ggtttgcacn ccttagaatg gttttgtttt aataaatgcn cnggttggnna 2065
      260 aaaaaaaaaa aaaaaaaaaa aaa 2088
262 <210> SEQ ID NO: 3
263 <211> LENGTH: 366
264 <212> TYPE: PRT
265 <213> ORGANISM: Meloidogyne incognita
267 <400> SEQUENCE: 3
268 Met Asn Tyr Ser Lys Asp Ala Pro Glu Phe Val Val Ser Pro Lys Asp
269 1 5 10 15
270 Ala Arg Glu Phe Val Val Lys Cys Met Gln Thr Val Gly Thr Ser Pro
271 20 25 30
272 Asp His Ala Gly Gln Leu Ala Asp Leu Leu Leu Asp Ala Asp Leu Val
273 35 40 45
274 Gly His Tyr Ser His Gly Leu Asn Arg Leu His Ile Tyr Val Asp Asp
275 50 55 60
276 Val Lys Asn Gly Val Lys Gly Asn Gly Val Pro Lys Val Leu Lys Gln
277 65 70 75 80
278 Lys Gly Gly Thr Ala Trp Val Asp Gly Glu Asn Leu Leu Gly Ala Val
279 85 90 95
280 Val Gly Asn Phe Cys Thr Asp Leu Ala Ile Lys Leu Ala Lys Glu Phe
281 100 105 110
282 Gly Val Ala Trp Val Val Thr Lys Asn Ser Asn His Tyr Gly Ala Cys
283 115 120 125
284 Gln His Tyr Thr Lys Lys Ile Ala Asn Ala Gly Met Val Gly Met Ser
285 130 135 140
286 Phe Thr Asn Thr Ser Pro Leu Met Phe Pro Cys Arg Ser Ser Glu Ile
287 145 150 155 160
288 Gly Leu Gly Thr Asn Pro Leu Ser Cys Cys Val Asn Ser Glu Lys Thr
289 165 170 175
290 Gly Asp Ser Phe Leu Leu Asp Met Ala Thr Thr Thr Val Ala Leu Gly
291 180 185 190
292 Lys Val Glu Leu Ala Asp Cys Arg Gly Lys Thr Gln Ile Pro Ser Thr
293 195 200 205
294 Trp Gly Ala Asp Ser Lys Gly Asn Pro Ser Thr Asp Thr Gln Val Val
295 210 215 220
296 Leu His Gly Gly Gly Leu Leu Pro Leu Gly Gly Ile Glu Glu Thr Gly
297 225 230 235 240
298 Ser Tyr Lys Gly Thr Gly Leu Ser Met Met Gly Glu Leu Phe Cys Gly
299 245 250 255
300 Ile Leu Ala Gly Ser Ser Phe Gly Lys Asn Val Arg Leu Trp Gly Gln
301 260 265 270
302 Ser His Lys Ala Ala Asp Asn Gly Gln Cys Phe Val Ala Ile Asp Gln
303 275 280 285
304 Glu Cys Phe Ala Pro Gly Phe Ala Pro Arg Leu Gln Gln Phe Leu Asp
305 290 295 300

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RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/060,848

DATE: 06/17/2002
TIME: 13:39:05

Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 1303

Seq#:2; N Pos. 409,1581,1607,1783,1889,1949,1990,2012,2025,2055,2057,2064

Seq#:2; Xaa Pos. 128

Seq#:4; Xaa Pos. 128

Seq#:6; N Pos. 382

VERIFICATION SUMMARY

DATE: 06/17/2002

PATENT APPLICATION: US/10/060,848

TIME: 13:39:05

Input Set : A:\12557-002001.txt

Output Set: N:\CRF3\06172002\J060848.raw

L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:34 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:1
L:133 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:1282
L:148 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:2
L:181 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:390
L:182 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:438
L:251 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1525
L:252 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1585
L:255 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1765
L:257 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1885
L:258 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1945
L:259 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:2005
L:340 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:112
L:417 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:360